

Tuesday 19 June 2012 – Afternoon

GCSE METHODS IN MATHEMATICS

B391/01 Methods in Mathematics 1 (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:

None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)

Duration: 1 hour



| | | | |
|--------------------|--|-------------------|--|
| Candidate forename | | Candidate surname | |
|--------------------|--|-------------------|--|

| | | | | | | | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|
| Centre number | | | | | | Candidate number | | | | |
|---------------|--|--|--|--|--|------------------|--|--|--|--|

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

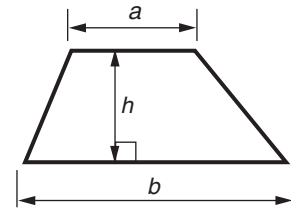
- The number of marks is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.



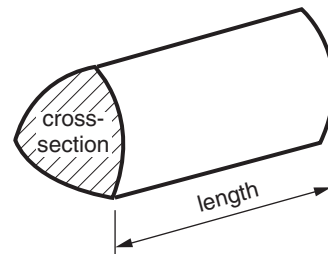
This paper has been pre modified for carrier language

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2} (a + b)h$



Volume of prism = (area of cross-section) \times length



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1 (a) Work out.

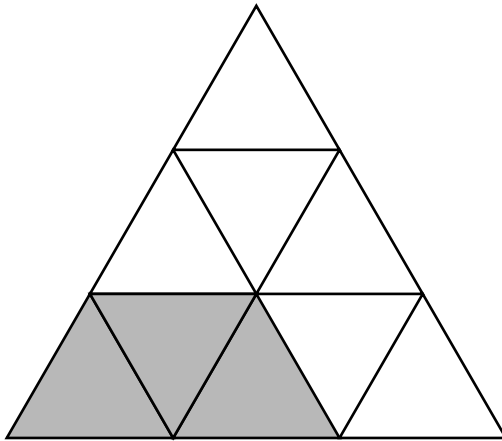
(i) $\frac{1}{2}$ of 34

(a)(i) _____ [1]

(ii) $\frac{3}{4}$ of 48

(ii) _____ [2]

(b) What fraction of this shape is shaded?
Give your answer in its simplest form.



(b) _____ [2]

(c) Arrange these numbers in order of size, smallest first.
Show how you decide.

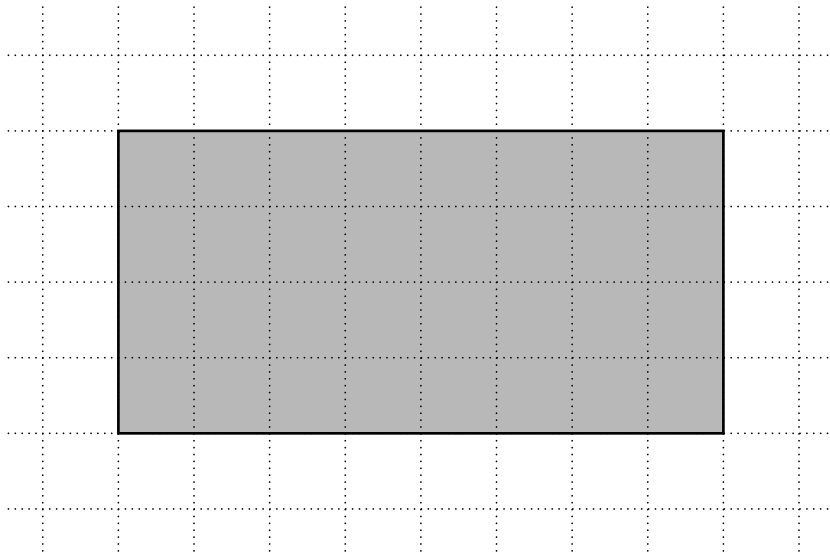
$$\frac{3}{10}$$

0.23

$$\frac{1}{4}$$

_____, _____, _____ [3]
smallest

- 2 (a) The rectangle is drawn on a one-centimetre square grid.



For the rectangle, work out

- (i) the area,

(a)(i) _____ cm^2

- (ii) the perimeter.

(ii) _____ cm [2]

- (b) Another rectangle has area 12 cm^2 and perimeter 14 cm .
Find the length and width of this rectangle.

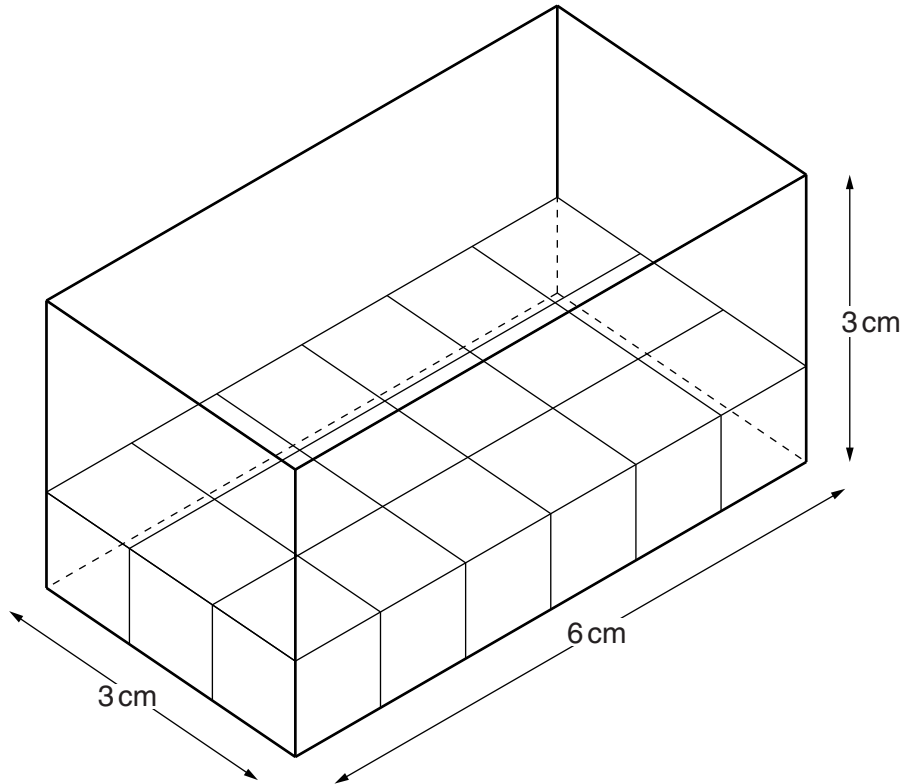


(b) Length of rectangle is _____ cm

Width of rectangle is _____ cm [3]

(c) The bottom layer of this cuboid is filled with one-centimetre cubes.

Find the volume of the cuboid.



(c) _____ cm^3 [2]

- 3 The table gives the populations, in 2001, of some islands.

| Island | Population |
|-----------------|------------|
| Portsea | 147 000 |
| Isle of Wight | 132 000 |
| Isle of Sheppey | 37 900 |
| Canvey | 37 500 |

- (a) Write the population of Portsea in words.

_____ [1]

- (b) Work out how many more people live on Portsea than on the Isle of Wight.

(b) _____ [1]

- (c) Work out how many people in total live on these four islands.

(c) _____ [2]

4 Sam is using these cards to make questions and answers for different calculations.



(a) Write down the two cards that add to give 100.

$$\square + \square = \square \quad [1]$$

(b) Show how Sam can use three of the cards for a subtraction.

$$\square - \square = \square \quad [1]$$

(c) Show how Sam can use three of the cards for a division.

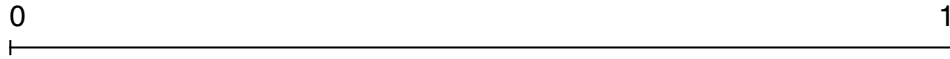
$$\square \div \square = \square \quad [1]$$

- 5 (a) On the probability scale, mark the following words.

Certain

Impossible

Evens



[2]

- (b) Cedrine buys a raffle ticket.
She says

“Either my ticket will be picked or it won't be picked. That means that I've got an evens chance of my ticket being picked.”

Explain why Cedrine is wrong.

[1]

6 (a) Find the value of the expression $\frac{b}{3}$ when $b = 39$.

(a) _____ [1]

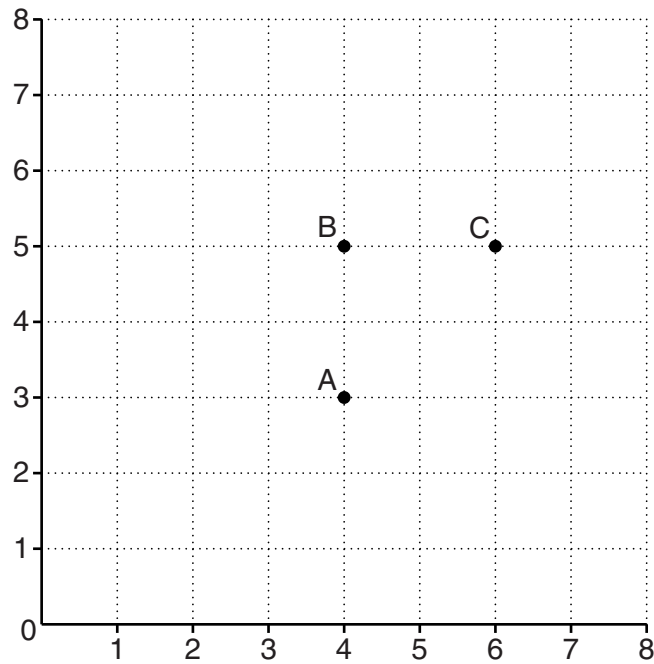
(b) Use the formula $p = 3q - 1$ to find p when $q = 4$.

(b) _____ [1]

(c) Solve the equation $5x = 15$.

(c) _____ [1]

7 The grid shows the positions of three points A, B and C.



(a) Write down the coordinates of A.

(a) (_____ , _____) [1]

(b) On the grid, Tim is choosing the position of another point, D.
He wants to make a quadrilateral ABCD.

(i) Give the coordinates of D if Tim decides to make a square.

(b)(i) (_____ , _____) [1]

(ii) Tim can also make three of these quadrilaterals.

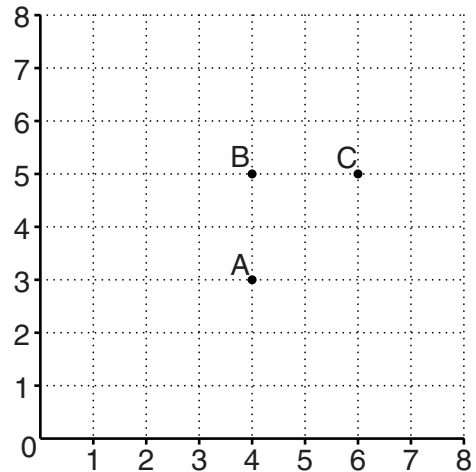
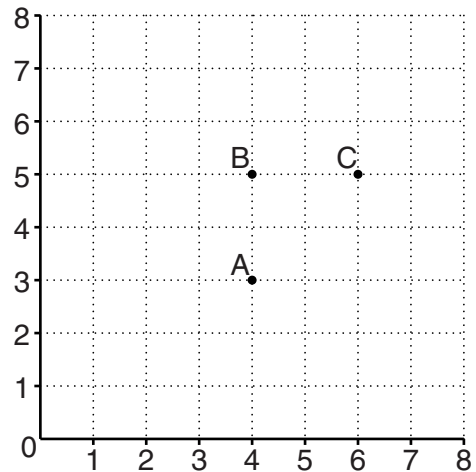
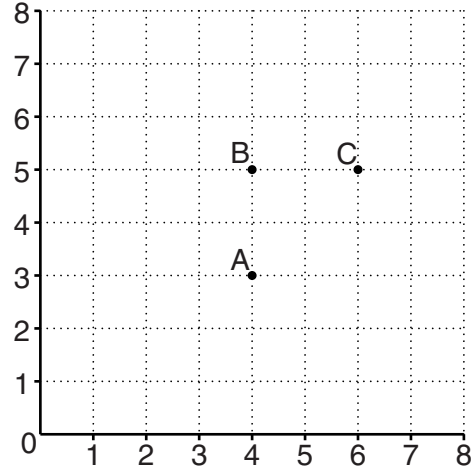
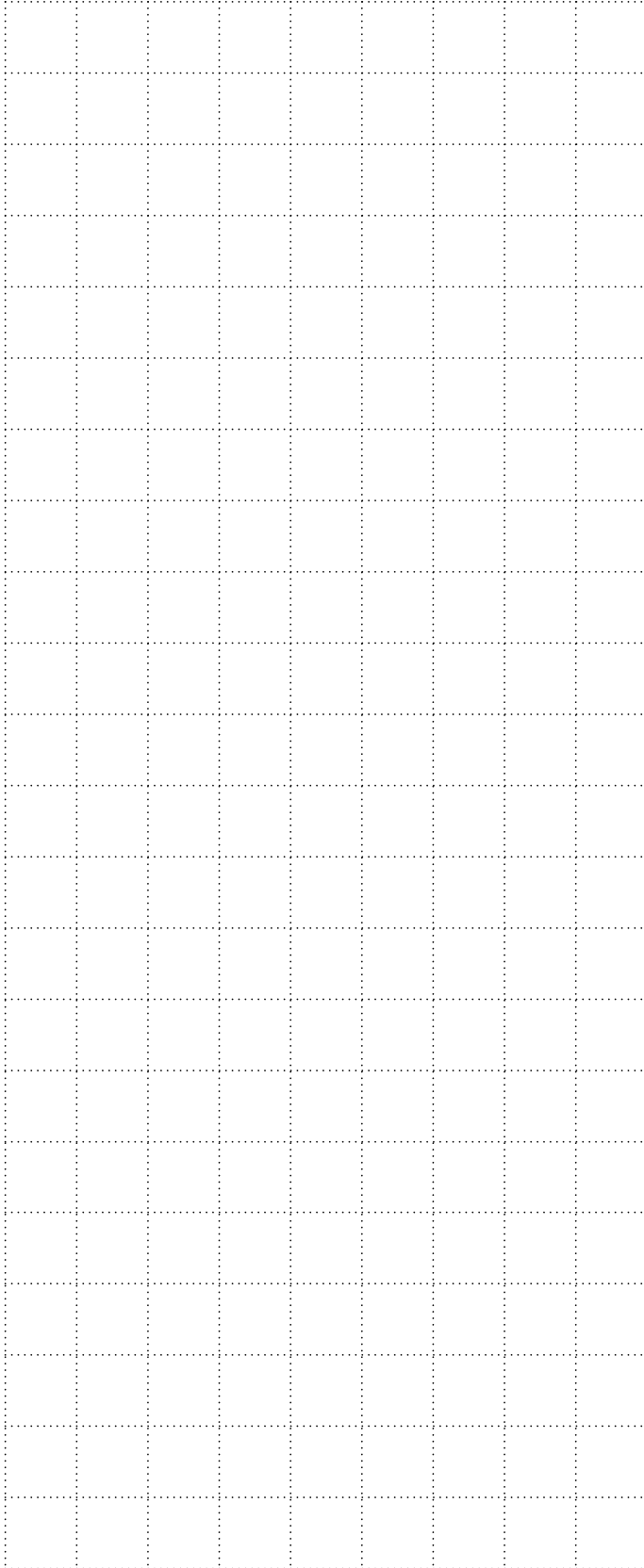
Kite

Rectangle

Parallelogram

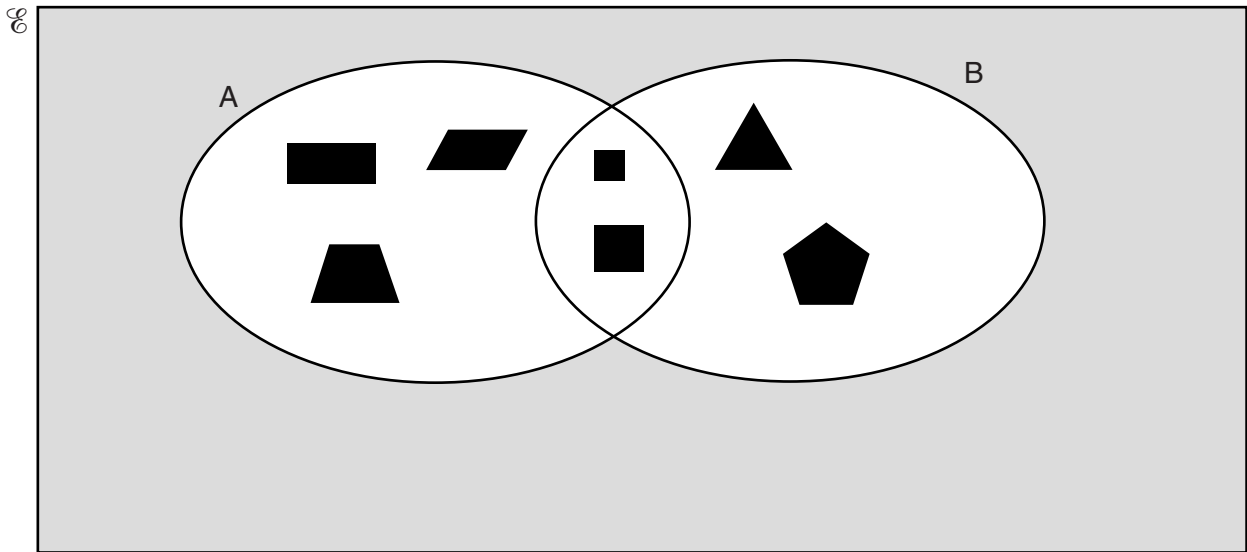
Trapezium

By placing D in different positions, draw these three quadrilaterals.
Label each drawing with the correct name.



[4]

- 8 In this question $\mathcal{E} = \{ \text{2D shapes} \}$.
Some accurately drawn shapes have been placed in the correct regions of the Venn diagram.



(a) Give the value of

(i) $n(A)$,

(a)(i) _____ [1]

(ii) $n(A \cap B)$,

(ii) _____ [1]

(iii) $n(A \cup B)$.

(iii) _____ [1]

(b) Give a description for shapes in

(i) set A,

(b)(i) _____ [1]

(ii) set B.

(ii) _____ [1]

(c) In the shaded region of the Venn diagram, draw a 2D shape that is neither in set A nor in set B. [1]

9 Work out the following.

(a) The square of 1.2

(a) _____ [2]

(b) (i) -0.4×-0.4

(b)(i) _____ [2]

(ii) the negative square root of 0.16

(ii) _____ [1]

(c) $4\frac{1}{2} \div 0.5$

(c) _____ [2]

10 (a) Factorise completely.

$$5x^2 - 10x$$

(a) _____ [2]

(b)* Solve.

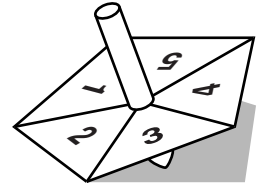
$$4x + 2 = 3(5 - 2x)$$

(b) _____ [3]

11 Construct a regular hexagon with each side 4 cm long.

[4]

12 Janine spins this fair spinner twice.
Her score is the total of the numbers from the two spins.



(a) Complete the grid showing Janine's possible scores.

| | | 2nd spin | | | | |
|----------|---|----------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1st spin | 1 | 2 | | | 5 | |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | 5 | | | 8 | |
| | 5 | | | | | |

[1]

(b) Find the probability that Janine's score is

(i) 4,

(b)(i) _____ [2]

(ii) an odd number.

(ii) _____ [1]

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